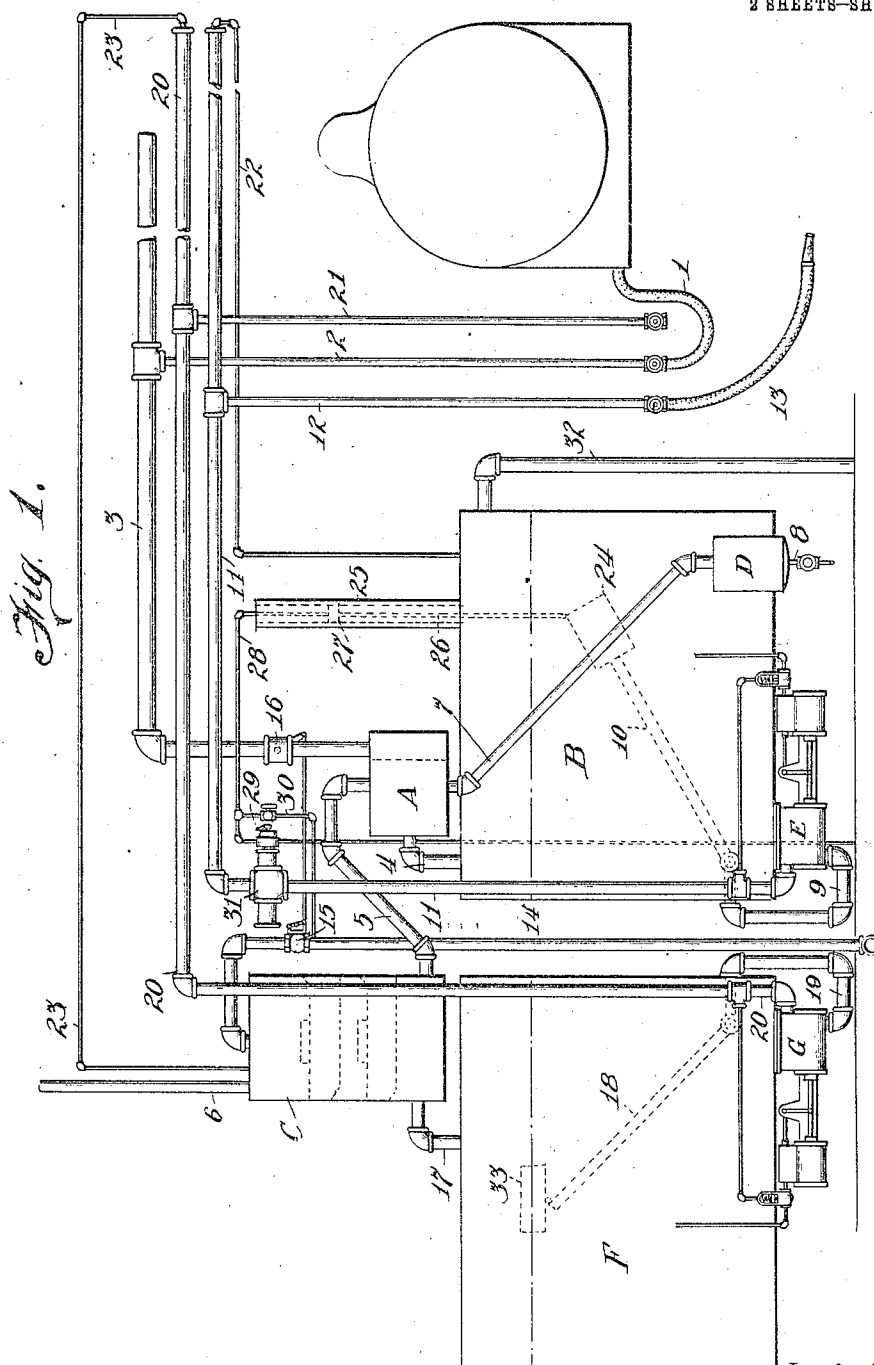


SYSTEM OF WASHING AND FILLING LOCOMOTIVE BOILERS.

Patented Oct. 10, 1911.

2 SHEETS—SHEET 1.

1,005,385.



Witnesses
Milton Lenoir
F. E. Olsen

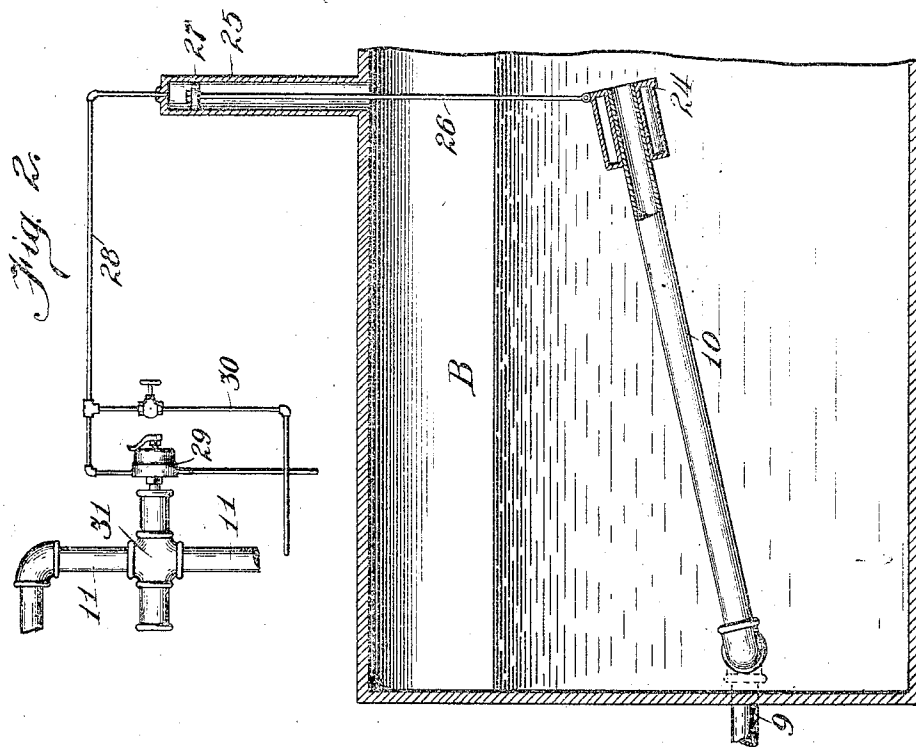
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UNITED STATES PATENT OFFICE.

WILLIAM WHITE, OF CHICAGO, ILLINOIS.

SYSTEM OF WASHING AND FILLING LOCOMOTIVE-BOILERS.

1,005,385.

Specification of Letters Patent.

Patented Oct. 10, 1911.

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To all whom it may concern:

Be it known that I, WILLIAM WHITE, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Systems of Washing and Filling Locomotive-Boilers, of which the following is a description, reference being had to the accompanying drawings, which form a part of my specification.

My invention relates more especially to a system adapted for use in washing out and filling locomotive-boilers, wherein the products blown from the locomotive-boilers, after the locomotives have been brought into the round-house, are utilized both for washing out and filling the boilers.

In the system illustrated and to be hereinafter described, the products are filtered and separated; the separation permitting the use of some of the heat-units of the blown-out steam for the purpose of heating a fresh water-supply.

The object of the invention is to provide means that will automatically adjust itself in the reservoir or hot water-supply so that water of a predetermined degree may be withdrawn; which, in the system illustrated, is to be used for washing out the boilers.

The means, in the particular embodiment of my invention, consists of a pivotally mounted take-off pipe whose orifice normally extends to the level of the water in the tank or reservoir, but during the operation of the system will be thermostatically brought to a plane in which the water will be of the selected or predetermined temperature, as will more fully hereinafter appear.

In the drawings:—Figure 1 is an elevation of a washing and filling system embodying my invention. Fig. 2 illustrates my invention partly in section and a portion of the mechanism in elevation.

In Fig. 1, wherein a washing and filling system is illustrated, I have shown a locomotive connected through flexible hose 1 and pipe 2, with pipe or receiving and conveying means 3, which in turn communicates with the separating and filtering chamber A. This chamber is connected by pipe 4, with wash-out water tank or reservoir B. Leading from the top of chamber A, is a pipe 5, whereby the blown-off steam is conveyed to a heater C, preferably near its bottom. Heater C, is of the type known

as an "open" heater, wherein the inflowing water is brought into direct contact with the steam. The heater is provided at its top with a vapor-escape or conduit 6. Extending from the bottom of chamber A, is a drain-pipe 7, which leads to sludge-chamber D, having a sewer connection through pipe 8. Pipe 4 carries the filtered water from chamber A to tank or reservoir B, where it is stored until it is desired to wash out the boilers. Leading from the bottom of tank B, is exit or wash-out line 9, which connects with a pump E. Communicating with pipe 9, and located within tank B, is loosely mounted take-off pipe 10, which is adapted to oscillate within the tank, as will be later described. The water taken from tank B, is then passed under pressure from pump E, up through pipe 11, which is provided with distributing pipe 12, which in turn may be connected with the locomotive-boiler by flexible tube 13. Heater C, is provided with a fresh water supply through pipe 14, which is provided with a suitable valve, as at 15, which valve is operatively connected with a valve 16, located in the pipe 3. Valve 16 is so situated as to be operated by the blown-out products before they reach the separating and filtering chamber A; the operation of this valve in turn operates valve 15, a predetermined degree, thereby admitting fresh cold water to heater C. The heated water from heater C, passes through pipe 17, to filling-water tank or reservoir F. Loosely mounted within the tank F, and adapted to swing upward and downward, is a suction or take-off pipe or means 18, which connects with pipe 19, whereby the water from filling-water tank F is conveyed to the suction-side of pump G; pump G, forces the water on through the main line 20, which is provided with the desired number of distributing pipes 21, which are suitably connected by flexible hose or otherwise with the locomotive-boiler to be filled. 22 and 23 are return or circulating-pipes for the washout-water line and the filling-water line, respectively. The water in the tanks varies in temperature at different planes or levels in the tank; the water at the bottom being of a less degree of temperature than that in the upper part of the tanks.

In practice it has been found that, in order to accomplish the proper washing out of the boiler, the water used should be about a certain temperature, which often is to be

had at different planes or levels. The water at the top is frequently too hot for washing-out purposes, while that at the bottom is often too cold. In such case, of course, the water intermediate of these points or levels is of the desired temperature. It is essential therefore that means be employed whereby the take-off pipe or means may be automatically made to follow the varying plane or level in which the water of the desired or selected degree of temperature may be found. For this reason therefore, I mount suction or take-off pipe 10 loosely in order to permit it to oscillate or move upward and downward, so that its orifice may be brought into different planes in the tank. Surrounding this take-off pipe 10, and preferably near its orifice, is an air-chamber 24, which may be of any suitable construction. This air chamber will tend to normally keep the end or orifice of pipe 10 up near the level of the water in tank B. Tank B, is provided with a cylinder 25, in which is located piston-rod 26, which in turn is connected with the suction or take-off pipe 10. The connection between piston-rod 26 and suction-pipe 10, must be a loose or pivotal one, as pipe 10 swings in the arc of a circle in its upward and downward movement; and rod 26 may be loosely connected to the piston-head 27, so as to permit of any slight oscillatory movement that may be made necessary by the movement of pipe 10 to any considerable extent. Communicating with cylinder 25 and of course on the opposite side of piston-head 27, is a pressure pipe 28, which communicates with a thermostatically-operated regulator at 29. A pipe 30 connects with a suitable source of supply and conducts either fluid or air under pressure to pipe 28. Pipe or washout-line 11, is provided with a cross at 31, which is provided with the thermostat whereby the regulator 29 is controlled. The thermostatically-controlled regulator 29 is so arranged, that when the water passing through pipe 11 is too hot, the thermostat operates and permits fluid under pressure to pass through to pipe 28 and into the upper portion of cylinder 25, thereby depressing piston-rod 26 and with it suction or take-off pipe 10. The pressure will continue to depress piston-rod 26, until suction-pipe 10 has reached a plane or level in tank B, where the water is of the desired degree of temperature, when, by reason of the decrease in temperature of the water passing through pipe 11, the thermostatically-controlled regulator 29 will close, reducing the pressure in pipe 28 and cylinder 25, permitting the fluid in pipe 28 to slowly exhaust through an exhaust opening or outlet, allowing suction-pipe 10 to return to its normal position, if the water at that point is of the proper temperature, which is made possible by the air-chambers 24 with which pipe 10

is provided. The regulator 29, may be of the well-known type, so that a detailed description and illustration thereof is not deemed necessary. In order that the tanks may not become filled beyond a certain point, over-flow pipes may be provided, as shown at 32. The suction or take-off pipe 18 of filling-water tank F, is also loosely mounted to permit of its movement upward and downward, and is provided with an air-chamber 33, which may be pivotally mounted on the end of pipe 18 as shown, or may be similarly secured to the pipe as air-chamber 24. The air-chamber 33, will keep the orifice of pipe 18 up near the top of the water where it is the hottest, which is the condition desired for filling.

I have shown and described what I believe to be one of the simplest forms of my invention, but it is apparent that the same may be altered in certain details without departing from the spirit of my invention. It is also apparent that the invention may be employed for other purposes and in connection with other types of washing and filling systems, and I do not wish to be understood therefore as limiting myself to the exact construction shown and described, but

What I claim as my invention and wish to secure by Letters Patent, is:—

1. In a boiler washing and filling system, a reservoir for hot water, mechanism communicating with said reservoir whereby the water may be conveyed to the point of use, and means having controlling connection with said mechanism whereby the latter may be automatically forced to take the hot water from within the reservoir at varying planes or levels.

2. In apparatus of the class described, a reservoir, means communicating with the reservoir-interior for conveying the contents therefrom, and mechanism adapted to be operated by the temperature of the contents passing through said means, whereby the point of communication of said means with the reservoir-interior is altered when the passing contents exceed a predetermined degree of temperature.

3. A reservoir substantially for the purpose described, a main line, a suction or take-off pipe communicating with the reservoir and the main line, and mechanism located intermediate of said line and the take-off pipe, adapted to be affected by the temperature of the contents passing through said line, whereby the point of communication of the take-off pipe with the reservoir-interior may be varied.

4. Reservoirs substantially for the purpose described, pipe-lines for receiving the contents from the reservoirs, take-off pipes intermediate of the reservoirs and said pipe-lines, and mechanism having controlling connection with said take-off pipes, whereby the

point of communication between the take-off pipes and reservoir-interior may be automatically varied.

5 A boiler washing and filling system, comprising washout and filling water-supply, a suction or take-off pipe communicating with said supply, the orifice of said pipe normally extending near the upper level of

said supply, and mechanism adapted to be controlled by the temperature of the out-flowing water and thereby vary the position of the take-off pipe orifice. 10

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Witnesses:

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